

Title: Integral Pump for High Frequency Atomizer

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The present invention relates to an handle part of a device used in the production of droplets by application of ultrasonic vibration to the end of one or more nozzles from which a liquid or slurry jet exits.

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#### BACKGROUND OF THE INVENTION

Producing droplets of predictable size within a narrow droplet size distribution has been the admirable goal of many prior art attempts. Heat and mass transfer characteristics, as well as other process parameters, change significantly for droplets within the range of diameters typically produced by many prior art devices. Process calculations for modeling such processes with wide droplet size distribution must be subdivided into size groupings and require sophisticated computer-based solutions. Actual operation of processes with wide droplet size distribution generally produces results which are less stable and less predictable than those in which droplet size is effectively narrowed.

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Capillary wave atomization is done with two general types of devices. US Patent 5,687,905 shows one of the types, the nozzle type, where liquid runs through a conduit inside a metal cone to a tip. The nozzle consists of a transducer located at a node in the nozzle axis and rigidly connected with two separated masses, where each mass is located on opposite axial sides from the transducer for vibrating the cone at a resonant

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